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Short Communication

First record of *Thecacineteta oregonensis* (Murphy, 1965) (Ciliophora: Suctorioria) on sea spider from Sandspit, Pakistan

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This study presents the first record of marine suctorian *Thecacineteta oregonensis* (Murphy, 1965) and its occurrence as an epibiont on sea spider *Ammothella appendiculata* (Dohrn, 1881) from Sandspit Karachi, Pakistan. This is the first record of a marine suctorian epibiont on a sea spider in the world. In the present study, only individuals of *A. appendiculata* were found infested. This study contributed to knowledge of marine arthropods as the host of suctorian epibiont.

[**Keywords:** Arthropoda, Karachi, Protist fauna, Sea spider, Suctorioria]

Introduction

Suctorian ciliates are rich species group that constitute about 7 % of reported species. Majority of them are sessile, feeds by extracellular digestion and lives as commensals of invertebrates and vertebrates¹. A diverse variety of aquatic metazoans viz. sponges, crustaceans, nematodes, polychaetes, mollusks and vertebrates like fish, tadpole as well as turtles are found to occupy sessile suctorians as epibionts²⁻⁷ and are considered as an important component of aquatic ecosystem and food chain^{4,8}.

Sea spiders are marine arthropods of class Pycnogonida with skinny bodies, small, cryptic, slow moving animals capable of concealing them between seaweeds, corals, sponges and hydroids⁹. They mostly feed on sessile or slow moving prey¹⁰ like hydroids, bryozoans, actinians and detritus¹¹. Moulting makes arthropods larval stages improper for suctorian attachment¹ but once the animal is fully grown suctorians can flourish on them. To the best of our knowledge this study represents the first record of the occurrence of epibionts on sea spider.

Material and Methods

Study site

Pakistan is located in the northern Arabian sea and has a coast line of about 1,050 km. Sandspit beach is located on the southern limits of Karachi at 24°50' N, 66°57' E (Fig. 1). The greater part of the beach is sandy but rocky portion is also present that provides a firm platform for the attachment of a variety of sessile organisms especially *Zoanthus* (Cnidaria: Zoantharia) colonies.

Sampling methods

Small colonies of *Zoanthus sansibaricus* Carlgren 1900 were randomly collected from intertidal rocks of Sandpit. They were brought to the laboratory and kept in aerated sea water aquarium where polyps were carefully observed for the presence of Pycnogonids. After sorting, Pycnogonids were preserved in ethanol for taxonomic identification and to study epibionts. Both Pycnogonids and epibionts were identified and measured with the help of a light microscope (Olympus BX 51). Ten randomly selected individuals of *T. oregonensis* were measured. The type material is deposited in the invertebrate collection of Centre of excellence in marine biology (CEMB), University of Karachi, Pakistan.

Results and Discussion

In the present study 04 intertidal sea spider species from four families Pycnogonidae, Wilson, 1878 (*Pycnogonum tessellatum*, Stock, 1968), Ammotheidae, Dohn, 1881 (*Ammothella appendiculata*, Dohrn, 1881), Callipallenidae, Hilton, 1942 (*Pigrogromitus timsanus*, Calman, 1927) and Endeidae (*Endeis* cf. *meridionalis*, Bohm, 1879) were collected from intertidal colonies of *Zoanthus sansibaricus* to examine the presence of epibionts. Out of these four sea spider species, only one species *Ammothella appendiculata* (Dohrn, 1881) was found to harbor epibionts on their body (Fig. 2).

Systematics (after Dovgal¹)

Class: SUCTOREA Claparede et Lachmann, 1859

Subclass: VERMIGENIA Jankowski, 1978

Order: SPELAEOPHRYIDA Jankowski, 1978

Family: THECACINETIDAE Matthes, 1956

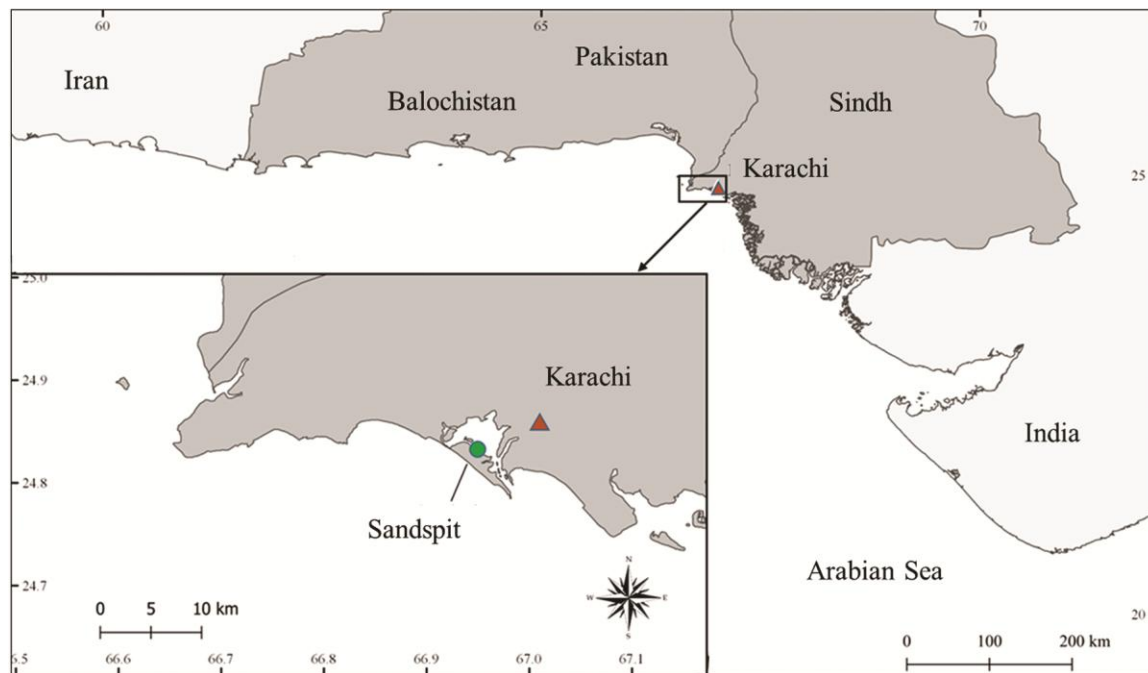


Fig. 1 — Map of the study site.

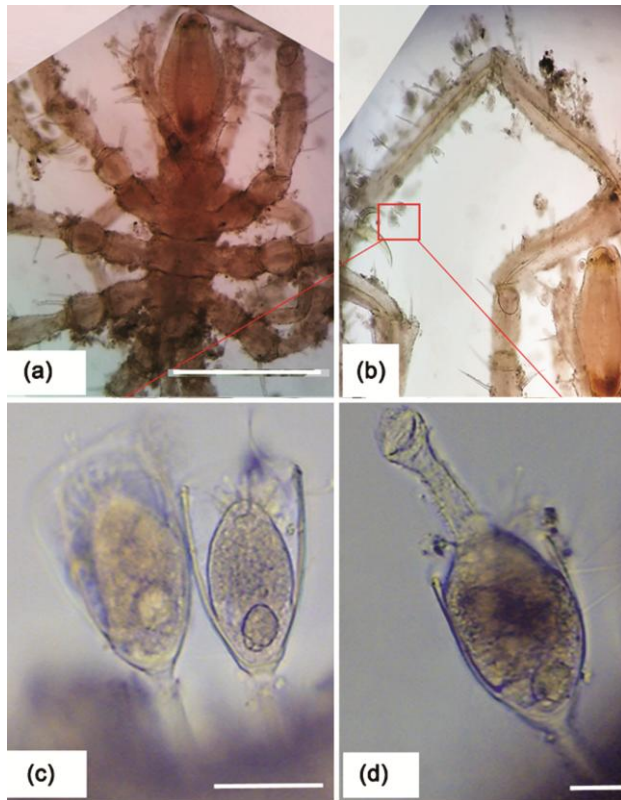


Fig. 2 — a-b = *Ammothella appendiculata* (Dohrn, 1881) with *Thecacineta oregonensis* (Murphy, 1965) as epibionts on their body surface from Sandspit, Pakistan (Scale bar: 0.3 mm), c = *Thecacineta oregonensis* (Murphy, 1965) (Scale bar: 22.5 μ m), d = Worm like swarmer of *T. oregonensis* extended out from lorica (Scale bar: 22.5 μ m)

Genus: *Thecacineta* (Collin, 1909)

Thecacineta oregonensis (Murphy 1965)

Two adult males and one adult female of *Ammothella appendiculata* (Dohrn, 1881) were found infested with *T. oregonensis*. More than 150 individuals of *T. oregonensis* colonized the body of a male sea spider *A. appendiculata*. A large number of individuals of *T. oregonensis* were found on moveable body parts like femur, tibiae and propodus but small population was found present on comparatively less moveable body parts like abdomen, coxae and palps. No individuals were found on main body trunk and proboscis. Only two individuals of *T. oregonensis* has been observed reproducing by vermigenic budding through the formation of worm shaped unciliary swarmer.

One adult female of *A. appendiculata* was found to have only 3-4 individuals of *T. oregonensis* on its body surface. It might be in the early stage of infestation at the time of capture. Two juvenile females of the same species were found to be non-infested because moulting makes juvenile stages unsuitable for epibionts attachment.

Diagnosis

Lorica smooth and thickened at distal rim. A cluster of 8-10 tentacles at anterior region, a large mega nucleus located in posterior part of the cytoplasm, stalk shorter than lorica and with saucer like attachment disk⁸.

Body dimensions (in μm)

Length of lorica: 45 (45 to 60)

Width of lorica: 32.5 (32 to 50)

Length of stalk: 27.5 (27 to 40)

Distribution

The first record of *Thecacineteta oregonensis* as an epibiont of nematode *Desmodora* sp. was reported from Yaquina head, Oregon, USA⁸. In present study, we have observed *T. oregonensis* from Sandspit, Karachi coast, Pakistan. This is the second record of this species as an epibiont.

Remarks

A large number of *T. oregonensis* were attached on the surface of distal regions of all eight legs of sea spider. We think that they prefer to attach legs of sea spider in order to get mobility to capture food because they feed on free swimming ciliates, flagellates and amoeba¹. More the movement of legs more will be the chances of food capture.

Conclusion

Suctorians are never observed before as epibionts on a sea spider, this study reports their efficiency to reach and attach themselves with such an active and mobile host. During this study *Pycnogonum tessellatum*, Stock, 1968, *Ammothella appendiculata*, Dohrn, 1881, *Pigrogromitus timsanus*, Calman, 1927 and *Endeis* cf. *meridionalis*, Bohm, 1879 were also studied for the presence of attached epibiont but only individuals of *Ammothella appendiculata* were observed to harbor Protist epibionts. However, it is still unclear that why only this particular species of sea spiders is infested and others are not? To explore this secret further studies are needed but due to the small size and cryptic mode of life of sea spiders, their collection is a big challenge.

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Conflict of Interest

No conflict of interest.

Author Contributions

ZG: Field work and writing of manuscript; GS: Designed the study and thoroughly checked the manuscript.

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